

# Hydraulic Fracturing Fluid Product Component Information Disclosure

|                                |                       |
|--------------------------------|-----------------------|
| Job Start Date:                | 11/18/2013            |
| Job End Date:                  | 11/19/2013            |
| State:                         | North Dakota          |
| County:                        | McKenzie              |
| API Number:                    | 33-053-04363-00-00    |
| Operator Name:                 | Kodiak Oil & Gas Corp |
| Well Name and Number:          | Koala 2-2-11-14H3     |
| Longitude:                     | -103.44227600         |
| Latitude:                      | 47.93431100           |
| Datum:                         | NAD83                 |
| Federal/Tribal Well:           | NO                    |
| True Vertical Depth:           | 11,247                |
| Total Base Water Volume (gal): | 3,351,134             |
| Total Base Non Water Volume:   | 0                     |



## Hydraulic Fracturing Fluid Composition:

| Trade Name               | Supplier    | Purpose              | Ingredients                                                              | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments        |
|--------------------------|-------------|----------------------|--------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|-----------------|
| Fresh Water              | Operator    | Base Fluid           |                                                                          |                                          |                                                            |                                                            |                 |
|                          |             |                      | Fresh Water                                                              | 7732-18-5                                | 100.00000                                                  | 87.51978                                                   | Density = 8.330 |
| PREMIUM PROP             | Halliburton | Proppant             |                                                                          |                                          |                                                            |                                                            |                 |
|                          |             |                      | Sintered bauxite                                                         | 1318-16-7                                | 100.00000                                                  | 10.12821                                                   |                 |
|                          |             |                      | Crystalline silica, cristobalite                                         | 14464-46-1                               | 5.00000                                                    | 0.50641                                                    |                 |
| HYDROCHLORIC ACID 10-30% | Halliburton | Acid                 |                                                                          |                                          |                                                            |                                                            |                 |
|                          |             |                      | Hydrochloric acid                                                        | 7647-01-0                                | 30.00000                                                   | 0.47125                                                    |                 |
| WG-36 GELLING AGENT      | Halliburton | Gelling Agent        |                                                                          |                                          |                                                            |                                                            |                 |
|                          |             |                      | Guar gum                                                                 | 9000-30-0                                | 100.00000                                                  | 0.28831                                                    |                 |
| CL-22UCw                 | Halliburton | Crosslinker          |                                                                          |                                          |                                                            |                                                            |                 |
|                          |             |                      | Modified alkane                                                          | Confidential                             | 60.00000                                                   | 0.07493                                                    |                 |
| OilPerm A                | Halliburton | Non-ionic Surfactant |                                                                          |                                          |                                                            |                                                            |                 |
|                          |             |                      | Ethanol                                                                  | 64-17-5                                  | 60.00000                                                   | 0.03507                                                    |                 |
|                          |             |                      | Heavy aromatic petroleum naphtha                                         | 64742-94-5                               | 30.00000                                                   | 0.01753                                                    |                 |
|                          |             |                      | Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched | 127087-87-0                              | 5.00000                                                    | 0.00292                                                    |                 |
|                          |             |                      | Naphthalene                                                              | 91-20-3                                  | 5.00000                                                    | 0.00292                                                    |                 |
|                          |             |                      | 1,2,4 Trimethylbenzene                                                   | 95-63-6                                  | 1.00000                                                    | 0.00058                                                    |                 |

|                          |             |                      |                                                                          |             |           |         |  |
|--------------------------|-------------|----------------------|--------------------------------------------------------------------------|-------------|-----------|---------|--|
| OilPerm B                | Halliburton | Surfactant           |                                                                          |             |           |         |  |
|                          |             |                      | Terpenes and Terpenoids, sweet orange-oil                                | 68647-72-3  | 30.00000  | 0.01781 |  |
|                          |             |                      | Proprietary component                                                    | Proprietary | 30.00000  | 0.01781 |  |
|                          |             |                      | Isopropanol                                                              | 67-63-0     | 30.00000  | 0.01781 |  |
| VICON NF BREAKER         | Halliburton | Breaker              |                                                                          |             |           |         |  |
|                          |             |                      | Sodium chloride                                                          | 7647-14-5   | 30.00000  | 0.01932 |  |
|                          |             |                      | Chlorous acid, sodium salt                                               | 7758-19-2   | 10.00000  | 0.00644 |  |
| CL-31 CROSSLINKER        | Halliburton | Crosslinker          |                                                                          |             |           |         |  |
|                          |             |                      | Potassium metaborate                                                     | 13709-94-9  | 60.00000  | 0.02295 |  |
|                          |             |                      | Potassium hydroxide                                                      | 1310-58-3   | 5.00000   | 0.00191 |  |
| MO-67                    | Halliburton | pH Control Additive  |                                                                          |             |           |         |  |
|                          |             |                      | Sodium hydroxide                                                         | 1310-73-2   | 30.00000  | 0.02240 |  |
| MC B-8630                | Multi-Chem  | Biocide              |                                                                          |             |           |         |  |
|                          |             |                      | Acetone                                                                  | 67-64-1     | 25.00000  | 0.00697 |  |
|                          |             |                      | Glutaraldehyde                                                           | 111-30-8    | 20.00000  | 0.00557 |  |
| MC MX 2-2822             | Multi-Chem  | Scale Inhibitor      |                                                                          |             |           |         |  |
|                          |             |                      | Methyl Alcohol                                                           | 67-56-1     | 20.00000  | 0.00605 |  |
|                          |             |                      | Sodium Salt                                                              | Proprietary | 20.00000  | 0.00605 |  |
| HAI-404M™                | Halliburton | Corrosion Inhibitor  |                                                                          |             |           |         |  |
|                          |             |                      | Methanol                                                                 | 67-56-1     | 30.00000  | 0.00221 |  |
|                          |             |                      | Aldehyde                                                                 | Proprietary | 30.00000  | 0.00221 |  |
|                          |             |                      | Isopropanol                                                              | 67-63-0     | 30.00000  | 0.00221 |  |
|                          |             |                      | Quaternary ammonium salt                                                 | Proprietary | 10.00000  | 0.00074 |  |
|                          |             |                      | 1-(Benzyl)quinolinium chloride                                           | 15619-48-4  | 10.00000  | 0.00074 |  |
| LoSurf-300D              | Halliburton | Non-ionic Surfactant |                                                                          |             |           |         |  |
|                          |             |                      | Ethanol                                                                  | 64-17-5     | 60.00000  | 0.00161 |  |
|                          |             |                      | Heavy aromatic petroleum naphtha                                         | 64742-94-5  | 30.00000  | 0.00081 |  |
|                          |             |                      | Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched | 127087-87-0 | 5.00000   | 0.00013 |  |
|                          |             |                      | Naphthalene                                                              | 91-20-3     | 5.00000   | 0.00013 |  |
|                          |             |                      | 1,2,4 Trimethylbenzene                                                   | 95-63-6     | 1.00000   | 0.00003 |  |
| FR-66                    | Halliburton | Friction Reducer     |                                                                          |             |           |         |  |
|                          |             |                      | Hydrotreated light petroleum distillate                                  | 64742-47-8  | 30.00000  | 0.00226 |  |
| FERCHEK A REDUCING AGENT | Halliburton | Iron Reducing Agent  |                                                                          |             |           |         |  |
|                          |             |                      | Citric acid                                                              | 77-92-9     | 60.00000  | 0.00107 |  |
|                          |             |                      | Hydroxylamine hydrochloride                                              | 5470-11-1   | 60.00000  | 0.00107 |  |
|                          |             |                      | Silica, amorphous - fumed                                                | 7631-86-9   | 5.00000   | 0.00009 |  |
| OptiKleen-WF™            | Halliburton | Concentrate          |                                                                          |             |           |         |  |
|                          |             |                      | Sodium perborate tetrahydrate                                            | 10486-00-7  | 100.00000 | 0.00081 |  |
| SP BREAKER               | Halliburton | Breaker              |                                                                          |             |           |         |  |
|                          |             |                      | Sodium persulfate                                                        | 7775-27-1   | 100.00000 | 0.00039 |  |

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

|  |  |                     |                                                                                |             |  |          |  |
|--|--|---------------------|--------------------------------------------------------------------------------|-------------|--|----------|--|
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Aluminum silicate                                                              | 1302-76-7   |  | 10.12821 |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Aluminum oxide                                                                 | 1344-28-1   |  | 3.03846  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Water                                                                          | 7732-18-5   |  | 1.78729  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Iron oxide                                                                     | 1309-37-1   |  | 1.01282  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Titanium dioxide                                                               | 13463-67-7  |  | 0.50641  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Ulexite                                                                        | 1319-33-1   |  | 0.07493  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Oxyalkylated phenolic resin                                                    | Proprietary |  | 0.01834  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Alcohols, C12-16, ethoxylated                                                  | 61791-08-0  |  | 0.01781  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Ethoxylated fatty acid                                                         | Proprietary |  | 0.01781  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex | 121888-68-4 |  | 0.01442  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Modified bentonite                                                             | Proprietary |  | 0.00624  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Oxyalkylated phenolic resin                                                    | Proprietary |  | 0.00611  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Terpenes and terpenoids                                                        | Proprietary |  | 0.00594  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Silica gel                                                                     | 112926-00-8 |  | 0.00288  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Surfactant mixture                                                             | Proprietary |  | 0.00288  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Surfactant mixture                                                             | Proprietary |  | 0.00288  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Polyacrylamide copolymer                                                       | Proprietary |  | 0.00226  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Naphthenic acid ethoxylate                                                     | 68410-62-8  |  | 0.00221  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Propylene carbonate                                                            | 108-32-7    |  | 0.00125  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | Propylene glycol                                                               | 57-55-6     |  | 0.00125  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |
|  |  |                     | 2-Ethylhexanol                                                                 | 104-76-7    |  | 0.00125  |  |
|  |  | Other Ingredient(s) |                                                                                |             |  |          |  |

|  |  |                     |                                                |             |  |         |  |
|--|--|---------------------|------------------------------------------------|-------------|--|---------|--|
|  |  |                     | Organic salt                                   | Proprietary |  | 0.00125 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Sodium chloride                                | 7647-14-5   |  | 0.00112 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Alcohols, C12-16, ethoxylated                  | 68551-12-2  |  | 0.00111 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Fatty acids, tall oil                          | Proprietary |  | 0.00074 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Polyethoxylated fatty amine salt               | 61791-26-2  |  | 0.00074 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Crystalline silica, quartz                     | 14808-60-7  |  | 0.00041 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Fatty acid tall oil amide                      | Proprietary |  | 0.00038 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Ammonium chloride                              | 12125-02-9  |  | 0.00038 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Ethoxylated amine                              | Proprietary |  | 0.00037 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Methanol                                       | 67-56-1     |  | 0.00012 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Butyl alcohol                                  | 71-36-3     |  | 0.00012 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Sorbitan, mono-9-octadecenoate, (Z)            | 1338-43-8   |  | 0.00008 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Sorbitan monooleate polyoxyethylene derivative | 9005-65-6   |  | 0.00008 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Ammonium phosphate                             | 7722-76-1   |  | 0.00007 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Sodium iodide                                  | 7681-82-5   |  | 0.00007 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Inorganic salt                                 | Proprietary |  | 0.00002 |  |
|  |  | Other Ingredient(s) |                                                |             |  |         |  |
|  |  |                     | Sodium sulfate                                 | 7757-82-6   |  | 0.00000 |  |

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)